

SEQUENCE LISTING

<110> KIM, TAE-YOON  
BIO CLUE & SOLUTION CO., LT

<120> EC SOD and Cell transducing EC SOD and use thereof

<150> KR10-2003-0076629

<151> 2003-10-31

<160> 33

<170> KopatentIn 1.71

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<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 1

atgttgcct tctgttc

18

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<213> Artificial Sequence

<220>

<223> primer

<400> 2

ttaagtgtc ttgcactc

18

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<211> 33

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<213> Artificial Sequence

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<220>  
<223> primer

<400> 4  
gatcctcgag tggctttgca ctgcctct 28

<210> 5  
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<220>  
<223> primer

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atctctagaa tgcctggcgct actgtgt 27

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<220>  
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<400> 6  
atcgaatcct cagcgccct tgcactcgct ctct 34

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<400> 7

gatcctcgag tggacgggcg aggactcggc

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<211> 31

<212> DNA

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gatcctcgag tcaggcggcc ttgcactcgc t

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<213> Artificial Sequence

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gatcctcgag tggacgggcg aggactcggc

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<211> 31

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<213> Artificial Sequence

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<223> primer

<400> 10

aatgctcgag tcactctgag tgctcccgcg c

31

<210> 11

<211> 240

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(240)

<223> Human EC SOD

<400> 11

Met Leu Ala Leu Leu Cys Ser Cys Leu Leu Leu Ala Ala Gly Ala Ser  
1 5 10 15  
Asp Ala Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser Asp Ser Ala  
20 25 30  
Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile Trp Gln Glu  
35 40 45  
Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala Ala Cys Gln  
50 55 60  
Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg Val Thr Gly  
65 70 75 80  
Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu Asp Ala Phe  
85 90 95  
Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser Ser Arg Ala  
100 105 110  
Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys Glu Ser Thr  
115 120 125  
Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln His Pro Gly  
130 135 140  
Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp Arg Tyr Arg  
145 150 155 160  
Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile Val Gly Arg  
165 170 175  
Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg Gly Gly Asn  
180 185 190  
Gln Ala Ser Val Glu Asn Ala Gly Arg Arg Leu Ala Cys Cys  
195 200 205  
Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln Ala Arg Glu  
210 215 220  
His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys Lys Ala Ala  
225 230 235 240

<210> 12

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> TAT-EC SOD fusion protein

<400> 12

Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala  
1 5 10 15  
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys  
20 25 30  
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly  
35 40 45  
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala  
50 55 60  
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro  
65 70 75 80  
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu  
85 90 95  
Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu  
100 105 110  
Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val  
115 120 125  
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp  
130 135 140  
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly  
145 150 155 160  
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp  
165 170 175  
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala  
180 185 190  
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu  
195 200 205  
Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg  
210 215 220  
Glu Ser Glu Cys Lys Ala Ala  
225 230

<210> 13

<211> 218

<212> PRT

<213> Artificial Sequence

<220>

<223> TAT-delta HD/EC SOD fusion protein

<400> 13

Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala  
1 5 10 15  
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys  
20 25 30  
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly

35            40            45  
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala  
 50            55            60  
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro  
 65            70            75            80  
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu  
 85            90            95  
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu  
 100           105           110  
 Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val  
 115           120           125  
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp  
 130           135           140  
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly  
 145           150           155           160  
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp  
 165           170           175  
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala  
 180           185           190  
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu  
 195           200           205  
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu  
 210           215

<210> 14  
 <211> 231  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> R9-EC SOD fusion protein

<400> 14  
 Arg Arg Arg Arg Arg Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala  
 1            5            10           15  
 Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys  
 20           25           30  
 Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly  
 35           40           45  
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala  
 50           55           60  
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro  
 65           70           75           80  
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu  
 85           90           95  
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu  
 100           105           110

Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val  
 115 120 125  
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp  
 130 135 140  
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly  
 145 150 155 160  
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp  
 165 170 175  
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala  
 180 185 190  
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu  
 195 200 205  
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg  
 210 215 220  
 Glu Ser Glu Cys Lys Ala Ala  
 225 230

<210> 15  
 <211> 232  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> K10-EC SOD fusion protein

<400> 15  
 Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Trp Thr Gly Glu Asp Ser  
 1 5 10 15  
 Ala Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala  
 20 25 30  
 Lys Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp  
 35 40 45  
 Gly Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp  
 50 55 60  
 Ala Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala  
 65 70 75 80  
 Pro Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr  
 85 90 95  
 Glu Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp  
 100 105 110  
 Leu Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala  
 115 120 125  
 Val Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg  
 130 135 140  
 Asp Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala  
 145 150 155 160  
 Gly Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu

165            170            175  
 Asp Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn  
 180            185            190  
 Ala Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly  
 195            200            205  
 Leu Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg  
 210            215            220  
 Arg Glu Ser Glu Cys Lys Ala Ala  
 225            230

<210> 16  
 <211> 696  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> nucleotide sequence encoding TAT-EC SOD fusion protein

<400> 16  
 aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct 60  
 gactcggcgg agtggatccg agacatgtac gccaaggcca cggagatctg gcaggaggtc 120  
 atgcagcggc gggacgacga cggcacgctc cacgccgcct gccagggtga gccgtcggcc 180  
 acgtggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttcggca gcttgcgcc 240  
 cgcgccaagc tcgacgcctt cttcgccctg gagggcttcc cgaccgagcc gaacagctcc 300  
 agccgcgcca tcacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg 360  
 cccactaca acccgctggc cgtgccgac ccgcagcacc cgggcgactt cggcaacttc 420  
 gcgtcccgcg acggcagcct ctggaggtac cgcgccggcc tggccgcctc gctcgcgggc 480  
 ccgcactcca tcgtgggccc ggccgtggtc gtccacgtg gcgaggacga cctgggcccgc 540  
 ggcggaacc aggcagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg 600  
 gtggcggtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagcgcaag 660  
 aagcggcggc gcgagagcga gtgcaaggcc gcctga 696

<210> 17  
 <211> 657  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> nucleotide sequence encoding TAT-delta HD/EC SOD fusion protein

<400> 17  
 aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct 60  
 gactcggcgg agtggatccg agacatgtac gccaaggcca cggagatctg gcaggaggtc 120  
 atgcagcggc gggacgacga cggcacgctc cacgccgcct gccagggtga gccgtcggcc 180  
 acgtggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttcggca gcttgcgcc 240



cgcgccaagc tcgacgcctt cttgccctg gagggcttcc cgaccgagcc gaacagctcc	300
agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg	360
ccccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc	420
gcggtccgcg acggcagcct ctggaggtag cgcgccggcc tggccgcctc gctcgcgggc	480
ccgcactcca tcgtgggccc ggccgtggtc gtccacgctg gcgaggacga cctgggccgc	540
ggcggcaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg	600
gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagtga	657

<210> 18  
 <211> 696  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 18	
cgggcgccgc ggccggcgcg gcggcggtgg acggcgagg actcgccgga gccaactct	60
gactcgccgg agtgatccg agacatgtac gccaaagtca cggagatctg gcaggaggtc	120
atgcagcggc gggacgacga cggcacgctc cacgccgct gccagggtga gccgtcggcc	180
acgtggacg ccgcgcagcc ccgggtgacc ggctcgtcc tctccggca gcttgcgcc	240
cgcgccaagc tcgacgcctt cttgccctg gagggcttcc cgaccgagcc gaacagctcc	300
agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg	360
ccccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc	420
gcggtccgcg acggcagcct ctggaggtag cgcgccggcc tggccgcctc gctcgcgggc	480
ccgcactcca tcgtgggccc ggccgtggtc gtccacgctg gcgaggacga cctgggccgc	540
ggcggcaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg	600
gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagcgcaag	660
aagcggcggc gcgagagcga gtgcaaggcc gcctga	696

<210> 19  
 <211> 699  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> nucleotide sequence encoding R9-EC SOD fusion protein

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ttgactcgg cggagtggat ccgagacatg tacgccaagg tcacggagat ctggcaggag	120
gtcatgcagc ggccgggacga cgacggcacg ctccacgcc cctgccaggt gcagccgtcg	180
gccacgttg acgccgcga gccccgggtg accggcgctg tctcttcg gcagcttgcg	240
ccccgcgcca agctcgacgc cttcttcgcc ctggagggt tccgaccga gccgaacagc	300

tccagccgcg ccatccacgt gcaccagttc ggggacctga gccagggctg cgagtcacc	360
gggccccact acaacccgct ggccgtgccg caccgcagc acccgggcga ctgcggcaac	420
ttcgggtcc gcgacggcag cctctggagg taccgcgccg gcctggccgc ctgctcgcg	480
ggccccgact ccacgtggg ccggggccgtg gtcgtccacg ctggcgagga cgacctgggc	540
cgcgggcgca accaggccag cgtggagaac gggaacgcgg gccggcggtt ggcctgctgc	600
gtggtgggcg tgtgcgggcc cgggctctgg gagcgccagg cgcgggagca ctcagagcgc	660
aagaagcggc ggcgcgagag cgagtgaag gccgcctga	699

<210> 20  
 <211> 68  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 20	
tatgaaagaa acctgggtgg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg	60
taaagtgc	68

<210> 21  
 <211> 70  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 21	
tcgabcactt tacgttttt ttccggctga gaccattcgg tccaccaggt ttcccaccag	60
gtttctttcc	70

<210> 22  
 <211> 243  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> PEPI-EC SOD

<400> 22	
Lys Glu Thr Trp Trp Glu Thr Trp Thr Glu Trp Ser Gln Pro Lys	
122            126            131            136	

Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser  
 141 146 151  
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile  
 156 161 166  
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala  
 171 176 181  
 Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg  
 186 191 196 201  
 Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu  
 206 211 216  
 Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser  
 221 226 231  
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys  
 236 241 246  
 Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln  
 251 256 261  
 His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp  
 266 271 276 281  
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile  
 286 291 296  
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg  
 301 - 306 311  
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu  
 316 321 326  
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln  
 331 336 341  
 Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys  
 346 351 356 361  
 Lys Ala Ala

<210> 23  
 <211> 230  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> PEP1-deltaHD/EC SOD

<400> 23  
 Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys  
 123 127 132 137  
 Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser  
 142 147 152  
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile  
 157 162 167  
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala

172	177	182	
Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg			
187	192	197	202
Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu			
207	212	217	
Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser			
222	227	232	
Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys			
237	242	247	
Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln			
252	257	262	
His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp			
267	272	277	282
Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile			
287	292	297	
Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg			
302	307	312	
Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu			
317	322	327	
Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln			
332	337	342	
Ala Arg Glu His Ser Glu			
347	352		
<210>	24		
<211>	737		
<212>	DNA		
<213>	Artificial Sequence		
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<223>	nucleotide sequence encoding PEP1-EC SOD fusion protein		
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taaactgctg gacgggcgag gactcggcgg agcccaactc tgactcggcg gactggatcc		120	
gagacatgta cgccaagtc acggagatct ggcaggaggt catgcagcgg cgggacgacg		180	
acggcacgct ccacgccgcc tgccaggtgc agccgtcggc cagcctggac gccgcgcagc		240	
ccgggtgac cggcgtcgtc ctctccggc agcttgcgcc ccgcgccaag ctgacgcct		300	
tcttcgcct ggagggttc cgcaccgagc cgaacagtc cagccgcgcc atccacgtgc		360	
accagttcgg ggacctgagc cagggtcgcg agtccaccgg gccccactac aaccgctgg		420	
ccgtgccga ccgcagcac ccgggcgact tcggcaactt cgcggtccgc gacggcagcc		480	
tctgaggta ccgcgccgcg ctggccgct cgtcgcggg ccgcactcc atcgtgggc		540	
gggccgtgtg gtccacgct ggcgaggacg acctgggccg cggcggaac caggccagcg		600	
tggagaacgg gaacgcgggc cggcggttg cctgctcgt ggtgggcgtg tgcgggccg		660	
ggctctggga gcgcaggcg cgggagcact cagagcgcaa gaagcggcgg cgcgagagcg		720	
agtgaaggc cgcctga		737	

<210> 25  
 <211> 695  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> nucleotide sequence encoding PEP1-deltaHD/EC SOD fusion protein

<400> 25  
 tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg 60  
 taaactgctg gacgggcgag gactcggcgg agcccaactc tgactcggcg gactggatcc 120  
 gagacatgta cgccaaggct acggagatct ggcaggaggt catgcagcgg cgggacgacg 180  
 acggcacgct ccacgccgcc tgccaggtgc agccgtcggc cacgctggac gccgcgcagc 240  
 cccgggtgac cggcgctcgt ctctccggc agcttgccgc ccgcgccaaag ctgcagcct 300  
 tcttcgcctt ggagggtctt ccgaccgagc cgaacagctc cagccgcgcc atccacgtgc 360  
 accagttcgg ggacctgagc cagggtcgtc agtcaccagg gcccactac aaccgctgg 420  
 ccgtgccga cccgcagcac ccgggcgact tcggcaactt cgcggtccgc gacggcagcc 480  
 tctggaggta ccgcgccggc ctggccgcct cgtcgcggg cccgcaactc atcgtgggcc 540  
 gggccgtggt cgtccacgct ggcgaggacg acctgggccg cggcggcaac caggccagcg 600  
 tggagaacgg gaacgcgggc cggcggctgg cctgctgcgt ggtgggcgtg tgcgggcccg 660  
 ggctctggga gcgccaggcg cgggagcact cagag 695

<210> 26  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> primer

<400> 26  
 ttgtctctaa tagagggtc 19

<210> 27  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> primer

<400> 27

tcaagcctgt ctatcttct 19

<210> 28  
<211> 21  
<212> DNA  
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<220>  
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<400> 28  
atctacagct cctttggtct t 21

<210> 29  
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<212> DNA  
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<220>  
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<400> 29  
atctacagct cctttggctt 20

<210> 30  
<211> 20  
<212> DNA  
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<220>  
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<400> 30  
aaccctcaga gccacccta 20

<210> 31  
<211> 20  
<212> DNA  
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<220>  
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<400> 31  
gtgcatacaa agcaaactgc 20

<210> 32  
<211> 20  
<212> DNA  
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<220>  
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<400> 32  
catcttccag gagcgagacc 20

<210> 33  
<211> 20  
<212> DNA  
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<220>  
<223> primer

<400> 33  
tccaccaccc tgttgctgta 20